

THREE NEW GOMPHINES.

BY JAMES G. NEEDHAM, LAKE FOREST, ILL.

Herewith I offer descriptions of three new species of dragon-flies of the subfamily Gomphinae of Odonata. Figures of the appendages of all will appear in my forthcoming handbook of the dragon-flies of North America.

Gomphus lentulus, n. sp.

Length 49 mm., abdomen 34 mm., hind wing 29 mm.

Colours obscure (due in part to fading of specimen); face obscure yellowish, shining; frons above and occiput and the ridges above the lateral ocelli yellow, the remainder of the vertex brownish. Prothorax brownish, with a double median spot of yellow on the dorsum. Thorax obscure yellowish, with a faint indication of a pair of narrow stripes of brown beside the middorsal carina, and of broader antehumeral and humeral stripes; a brown pale line on the third lateral suture. Legs black, hairy (male), with coxæ, trochanters, external (dorsal) face of the tibiæ and of the two basal segments of the tarsi yellow. Wings hyaline, costa yellow, stigma fulvous, covering 5-6 cells; antecubitals 13-14 on the fore wings, 9-10 on the hind wings; postcubitals 10-11 on all wings; no anal loop, but veins A1 and A2 are widely separated at base, and there is a single elongated cell between, as is usual in *G. villosipes*; between the anal triangle and this cell there is but one other cell bordering on the anal vein.

Abdomen brownish, broadly streaked with yellow longitudinally on segments 1-4, becoming suffused with rufous on segments 7-9; segment 10 and appendages yellow; segment 9 cut very obliquely at apex, longer on the dorsal side, its lateral margins little dilated. Superior appendages shorter than the inferiors, strongly divergent, straight, scarcely tapering, suddenly obliquely truncate on end, with an acute internal angle and a broad, black caruncle under the obtuse external angle. Inferior appendage roundly divided, its forks not wider apart than are the two superior appendages, straight, tapering to the darker coloured, sharply-upcurved tips.

A single male specimen, collected end of June, 1898, five miles north-east of Flora, Ill., Little Wabash River, by J. F. Garber, in the collection of Mr. Chas A. Hart, who has very kindly offered me the specimen for description. It belongs to the subgenus *Arigomphus*, and *G. pallidus* is perhaps its nearest ally.

Gomphus cavillaris, n. sp.

Length 41 mm., abdomen 30 mm., hind wing 24 mm.

Face yellow, tinged with brown on the sutures and on the middle of the labrum. Vertex blackish, except the postocellar ridge and a narrow basal ring around each antenna. Occiput yellow, straight, or very slightly convex at its ends, with a thin fringe of black hairs.

Prothorax brown, with median and lateral spots of greenish yellow. Dorsum of the thorax greenish yellow, with a triangular median stripe of brown, divided on the carina, greatly dilated below, almost interrupted on the collar. Humeral and antehumeral stripes distinct, the latter isolated above. Sides greenish yellow, with narrow pale brown stripes on sutures. Legs entirely reddish beyond the trochanters, with black spines and black-tipped claws. Wings hyaline, costa yellow, stigma fulvous. Antecubitals of fore wing 9, of hind wing 7, postcubitals 6-7 on all wings; the 1st and 4th antecubitals of the hind wings hypertrophied.

Abdomen brown, with ill-defined middorsal stripe of yellowish green, disappearing on segments 8 and 9. Sides of segments 1 and 2, including the auricles and base of 3, greenish yellow; indistinct lateral paler marks also on 4-6; sides of 7-9 bright yellow inferiorly, superiorly fulvous; 10 brown, paler below; appendages brown. Apex of segment 8 cut very obliquely, longer on the dorsal side.

Appendages brown, the superiors scarcely longer than the inferiors, and scarcely more divergent, obliquely truncate, with the inner angle produced into a long, straight, posteriorly-directed point, the external angle also acute, short, situated at two-thirds their length. Viewed from the side, the external angle presents an inferior tooth, and beyond it on the outer margin are two other smaller teeth before the apex, one near the

tooth first named, with a distinct notch intervening, and the other near the apex; branches of the inferior appendage tapering, upcurved, their tips appearing outside the inner angle of the superiors.

Vulvar lamina of female completely divided into two short, broad lobes, and hind femora each with a double row of less numerous, much longer and stronger spines, otherwise similar to the male.

One male, Ft. Reed, Fla., 6th March, 1876, collected by Professor J. H. Comstock, and in the Cornell University collection; and a number of specimens of both sexes, Gotha, Fla., 27th and 28th February, collected by Miss Matilda Wichtendahl, and in the collection of Mr. C. C. Adams.

Our smallest species; as closely related to *G. militaris* as to any other.

Ophiogomphus phaleratus, n. sp.

Length 47 mm., abdomen 35 mm., hind wing 30 mm.

Face yellow, vertex black, except two rings on the base of each antenna, two minute crescents surrounding the lateral ocelli in front, the ends of the postocellar ridge and a spot on the rear, including the middle of this ridge; occiput yellow, with a thin fringe of brown hair on the straight hind margin.

Thorax thinly pubescent; prothorax brown, with a yellow twin spot on the middle and a larger yellow spot on each side. Dorsum of thorax with a moderate stripe of brown, divided by yellow on the middle of the carina, contracted on the collar; humeral and antehumeral stripes of brown, confluent above and below, around a narrow dividing line of yellow. Sides of thorax yellow, with narrow lines of pale brown on the sutures. Legs yellow, a blackish spot on the apical fourth of the femora above, tibiæ and tarsi black, with a yellow stripe on the external face of the tibiæ; knees yellow. Wings hyaline; costa yellow, stigma pale brown; antecubitals of the fore wing 31, of the hind wing 9, postcubitals of all wings 9-10.

Abdomen brownish, with a row of broad spots on the dorsum of segments 1-9, covering segment 1, restricted to the basal two-thirds of segments 2-9, best defined on the middle segments. Segment 10 wholly

yellow. Sides of segments 1-3 yellow, including the auricles; sides of 7-9 broadly yellow, with apical ventral angles bordered with black; appendages yellow.

Appendages yellow, the superiors one-third longer than the inferior, hardly as long as the 9th abdominal segment. Viewed from above, the superiors are arcuate, approximated at apex around an oval space, but not quite touching, smoothly rounded externally; the inferior shows an oval apical cleft, whose depth equals one-third the length of that appendage. Viewed from the side, the superiors are broad at base, suddenly contracted just beyond, and then cylindric and regularly declined to apex, with the superior margin regularly curving from base to apex; a straight row of half a dozen black denticles beneath the apical third; apex obtuse. Inferior declined at base and upcurved at apex, its superior margin forming a regular semicircular curve; apices hidden between superiors, each bearing a little superior tooth.

A single male specimen collected at Corvallis, Oregon, June 6th, by Prof. A. B. Cordley, by whose generosity the specimen is now in the collection of the writer.

NOTES.

We regret to record the death of Mr. R. J. WEITH, of Elkhart, Indiana, which took place on Sunday, September 21st, after an illness of only two days, from appendicitis. Mr. Weith was born in Prussia, on the 15th of September, 1847. At the age of twenty-five he came to America, and after visiting many of the large cities in the east and south, finally settled at Elkhart, where he lived for about a quarter of a century. For many years he devoted himself to the study of entomology and the collection of insects, especially Hymenoptera, and made many notable captures.

MR. OTIS W. BARRETT, formerly of Tacubaya, Mexico, is now at the Agricultural Experiment Station, Mayagüez, Porto Rico, and desires his correspondents to take note of his new address.

THE ANNUAL MEETING of the Entomological Society of Ontario will be held in London, on Wednesday and Thursday, October 29th and 30th.